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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,700	04/10/2001	Volker Kuhnel	33495	1771

116 7590 05/06/2004

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EXAMINER

GRAHAM, ANDREW R

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/829,700

Applicant(s)

KUHNEL ET AL.

Examiner

Andrew Graham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2002 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on July 12, 2002 was filed after the mailing date of the application on April 10, 2001. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

Drawings

2. The drawings are objected to because of the following minor informalities:

- page 6, line 15 specifies the loudness of the standard as " K_{kN} ", but Figure 2 uses the reference characters " L_{kN} "
- page 6, line 22 specifies a second gradient as " α_{kT} ", but Figure 2 uses the reference characters " α_{kI} ". The reference characters " α_{kT} " also appear on page 7, line 1
- page 7, line 3 specifies loudness of a hearing impaired person as " L_{kT} ", but Figure 2 uses the reference characters " L_{kI} ". The reference characters " L_{kT} " also appear on line 5 of page 7.
- The "cu" in the units label "cu/dB" in Figure 3 is not explained or disclosed in the specification

A proposed drawing correction, corrected drawings, or amendment to the specification to add or amend the reference sign(s) in the

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description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112, 1st Paragraph

The following is a quotation of the first paragraph of 35 U.S.C.

112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claim 9** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 9 states the weighting of the first factor, which according to Claim 1, corresponds to the individual loudness perception, is a factor of 2/3 while weighting the second factor, which corresponds to the normal loudness perception in Claim 1, by a factor of 1/3. Claim 9 is dependent upon Claim 8, which is in turn dependent upon Claims 3 to 6. Claims 5 and 6 delimit the use of the HVL0/HLL0 factor. The specification states that, for the values related to the HVL0/HLL0

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factor, the individual level is weighted by a factor of $1/3$ and the normal level is weighted by a factor of $2/3$, which is opposite that claimed in Claim 9 (page 11, lines 13-15 of specification). The specification supports a $2/3$ scaling of the individual user's level and a $1/3$ scaling of the normal level for the HVLS/LOHL factor, but not for the HVL0/HLL0 factor (page 9, lines 7-10 of the specification).

Appropriate correction is required.

Claim Rejections - 35 USC § 112, 2nd Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-9** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "use of the weighted loudness perception" in line 6 of the claim. However, two weighted loudness perceptions are detailed in the claim, one "of the individual" (line 4) and one "of a normal loudness perception" (line 5). The "individual" loudness perception is "weighted by a first factor" (line 4) and the normal loudness perception is "weighting ... by a second factor" (lines 5-6). As the citation in line 6 does not clearly

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indicate to which of these perceptions is being referred, there is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites in the equation " $\log(HVHL)$ ", but the other references to the equation in the application (bottom of page 7) list this factor as " $\log(HV/HL)$ ".

Claim 4 also cites the variable " $-V_{p_{\text{consta}}}$ " in line 8 of the claim, but the variable listed in lines 3 and 10 of the same claim is " VP_{consta} ".

Appropriate correction is required.

Claims 2-3 and 5-9 are rejected due to their respective dependencies upon Claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the

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reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. **Claims 1 and 2** are rejected under 35 U.S.C. 102(e) as being anticipated by Ishige et al (USPN 6094489). Hereafter, "Ishige et al" will simply be referred to as "Ishige".

Ishige discloses a digital hearing aid with particular sound processing and compensation. The compensation by the system of Ishige is based on a predetermined input sound pressure, wherein the compensation is performed according to the user's hearing characteristic when the input sound pressure is above the predetermined pressure, but is performed according to a changed user's hearing characteristics when the input sound pressure is below the predetermined pressure (col. 10, lines 64-67). Figures 5-8 illustrate a first embodiment of such a system. Figure 6 illustrates loudness curves for a normal hearing person and a hearing-impaired user of the hearing aid device (col. 10, lines 34-39). The shown curves are derived from data of a normal hearing person and a hearing impairment person (col. 10, lines 37-39 and 45-48). The hearing characteristics of a user are obtained from a fitting device (31) and stored in advance in a memory (24), where they are then retrieved for the calculation of the applied gain in the system (col. 9, lines 62-64 and col. 10, lines 11-17). The function of the fitting device (31) to

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store the hearing characteristics of the user in the memory (24) reads on "measurement and quantification by parameters of the loudness perception of the individual". The function that is shown in Figure 6 for approximating the loudness curve of a normal hearing person is based on information obtained from the memory section (col. 11, lines 20-22). This data reads on "a normal loudness perception and its parameters". In terms of hardware, a curve setting section (43) inputs the hearing ability data from the normal hearing person and the user, and determines the gain required for the hearing sense compensation section (22) (col. 11, lines 56-63). This established gain is based on the difference between the functions approximating the loudness curve of the normal hearing person and the individual user, represented generally by the equation $G=b-a$, where Figure 6 illustrates that a and b are sound pressure levels on the loudness curves of the normal person and user points, respectively, at the same detected loudness level (c') (col. 10, lines 45-50). Mathematically, this gain formula can equivalently be rewritten as $1=(1/G)*b-(1/G)*a$. Thus, the resulting gain can be viewed as a factor of sound pressure at a loudness level on the loudness curves of both the normal person and the user. The coefficients of $(1/G)$ in the equivalent equation shown above read on "weighted by a first factor" and "weighting" the normal person's loudness perception "by a second factor". The fact that both of these loudness perception levels are used in determining the applied gain for sound pressure levels less than c' reads "use of the weighted loudness perception and its parameters for adjusting the

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hearing aid". It is further noted that the loudness function of the user is changed in the system of Ishige for sound pressure levels below c'' , which means that the coefficients in the above equivalence equation would be different from each other.

Regarding **Claim 2**, as detailed above, the gain of the system is based on the loudness functions of a normal person and a user (col. 10, lines 34-50). This reads on "wherein compression and/or amplification is/are adjusted in the hearing aid". Ishige also states that every frequency band of the input sound signal is analyzed, and that the gain for every frequency band is determined by the control section (23) and the gain is applied by the hearing sense compensation circuit (col. 10, lines 19-30). This determination of the gain per frequency band reads on "the amplification are each determined as a function of frequency".

Allowable Subject Matter

6. **Claims 3-9** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In the examiner's opinion, none of the prior art of record teaches in its entirety or in combination with other references the use of a HVLS/LOHL factor, which is defined by the applicant as a

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function of the gradient of a loudness factor versus the hearing loss level, or the use of a HVL0/HLL0 factor, which is defined by the applicant as a function of a loudness factor of zero compared to the hearing loss level, when these two factors are considered in combination with the other limitations of respective Claims 3 and 5. Claims 4 and 6-9 are considered allowable based on their respective dependencies upon at least Claims 3 and 5.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Uvacek et al (USPN 6327366 B1) discloses a system for determining an individual user's loudness perception and makes processing adjustments also based on a normal loudness perception function.

Widin (USPN RE 34,961) discloses the use of a user's real ear characteristics along with a target model in determining the processing parameters of hearing aid.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is 703-308-6729. The examiner can normally be reached on Monday-Friday, 8:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AG

Andrew Graham
Examiner
A.U. 2644

ag
April 29, 2004



MINSUN OH HARVEY
PRIMARY EXAMINER